# Transistor with Shallow Germanium Implantation Region in Channel

ABSTRACT OF THE DISCLOSURE

A method of manufacturing a transistor and a structure thereof, wherein a very shallow region having a high dopant concentration of germanium is implanted into a channel region of a transistor at a low energy level, forming an amorphous germanium implantation region in a top surface of the workpiece, and forming a crystalline germanium implantation region beneath the amorphous germanium implantation region. The workpiece is annealed using a low-temperature anneal to convert the amorphous germanium region to a crystalline state while preventing a substantial amount of diffusion of germanium further into the workpiece, also removing damage to the workpiece caused by the implantation process. The resulting structure includes a crystalline germanium implantation region at the top surface of a channel, comprising a depth below the top surface of the workpiece of about 120 Å or less. The transistor has increased mobility and a reduced effective oxide thickness (EOT).